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Tillage.

Tillage is either dry, *kádáramba* (K.), or wet, *perirámba* (K.). The dry field tillage varies according as the soil is black or red and sandy. For dry tillage a black soil field is first ploughed and cleared of grass and weeds by the heavy or *negali* plough. Three ploughings by this heavy plough, one along, one across, and one cornerwise, are almost always given. These, especially in cotton fields, are necessary to uproot a grass called *karige* Cynodon dactylon which, eight to ten inches below the surface, forms a thick mat and chokes all other growth. If after three ploughings any bushes are still standing they have to be uprooted by the hoe. When the large clods left by the plough, after having been thoroughly burnt by the sun, are slightly softened by the first south-west rains, they are crushed by drawing a block of heavy wood over them and the ground is two or three times loosened by the hoe-harrow or *kunti*. When a black soil field has been once brought under tillage it requires no more ploughing. The only care of the husbandman in after-years is to keep the surface as firm and consistent as possible. All that is wanted before the yearly sowing is to hoe or harrow the field so that all weeds may be cleared from it and the surface loosened. To save himself the trouble of using the heavy plough, whenever he sees new shoots of *karige* or other grass the farmer removes them by digging the weedy spots during the dry season with a hand-hoe. If he is careless and allows the weeds to grow, their turfy roots year after year gain strength and widen the area that is unfit for crops. Red and sandy soils, especially sandy soils which are apt to harden and cake after rain, are kept loose and friable by ploughing the field every year with the light plough or *ranti*. Two, if not three, ploughings are necessary; the first lengthwise, the second across, and the third, if at all, cornerwise. Hardworking landholders generally give the first ploughing immediately after the crop has been cleared and the second ploughing after the first heavy fall in the next south-west rainy season. Afterwards the clods are broken and the surface smoothed and prepared for sowing by a scalping knife which cuts up the old stubble *hanchichuru* (K.), stout stalks of weeds, and whatever else presents itself. If a considerable time has passed since the last scuffing this operation is repeated immediately before sowing. Both in red and in black soils the seed is sown from the drill or *kurgi*. After the seed has been sown it is covered with loose earth and the field is harrowed. Delicate seeds in particular soils are sometimes sown broadcast and then covered by having a bundle of prickly bamboos or other thorny bushes drawn over the field. The same is sometimes done in detached and uneven spots that do not admit of the use of the seed-drill.

Crops.

According to their seed times and harvest times Belgaum crops belong to three classes, early-rain or *tusi* (H.); main-rain called *kharif* (H. and M.) or *mungári* (K.); and late or cold-weather called *rabi* (M. and H.) or *hingári* (K.). Crops sown in the latter half of May and the first half of June and gathered before the end of September are called *tusi* or early-rain crops. To this class belong *náchni* (M.) or *rági* (K.), Eleusine corocana; *udid* (M.) or *uddu* (K.), Phaseolus mungo; *til* (M.) or *yallu* (K.), Sesamum indicum; maize, *makái* (M.)

or *mekke jala* (K.), Zea mays; and *rála* (M.) *káng* (M.) or *navni* (K.), Panicum italicum. The *kharif* or main monsoon crops include crops sown towards the end of June and in the beginning of July, that is when the first heavy fall of rain is supposed to be over, and reaped in December and January. The main monsoon crops are Indian millet, *jvári* (M.) or *jvála* (K.), Sorghum vulgare; spiked millet, *bájri* (M.) or *saji* (K.), Penicillaria spicata; rice, *bhát* (M.) or *bhatta* (K.), Oryza sativa; *math* (M.) or *madki* (K.), Phaseolus aconitifolius; *tur* (M.) or *togri* (K.), Cajanus indicus; *kulthi* (M.) or *hurli* (K.), Dolichos biflorus; *mug* (M.) or *hesru* (K.), Phaseolus radiatus; *pávta* (M.) or *avri* (K.), Dolichos lablab; *javas* (M.) or *agsi* (K.), Linum usitatissimum; *tág* (M.) or *sanbu* (K.), Crotalaria juncea; and *ambádi* (M.) or *pundi* (K.), Hibiscus cannabinus. The *rabi*, that is the late or cold-weather crops, comprise all cold-weather crops that is those which require little or no rain. They are sown in September and October and are reaped in January and February. The chief cold-weather crops are gram, *harbhara* (M.) or *kadli* (K.), Cicer arietinum; wheat, *ghau* (M.) or *godi* (K.), Triticum æstivum; cotton, *kápus* (M.) *hatti* (K.), Gossypium herbaceum; tobacco, *tambáku* (M.) or *hage soppu* (K.), Nicotiana tabacum; castor, *erand* (M.) or *audla* (K.), Ricinus communis; and safflower, *kardai* (M.) or *kusbi* (K.), Carthamus tinctorius.

In 1881-82, of 1,072,820 acres held for tillage, 196,815 acres or 18·34 per cent were fallow or under grass. Of the remaining 876,005 acres 69,921 were twice cropped. Of the 945,926 acres under tillage, grain crops occupied 698,337 acres or 73·82 per cent, 422,945 of them under Indian millet, Sorghum vulgare; 64,774 under rice, Oryza sativa; 63,499 under wheat, Triticum æstivum; 58,381 under spiked millet, Penicillaria spicata; 38,016 under Italian millet, Panicum italicum; 30,016 under *rági* or *náchni*, Eleusine corocana; 9416 under *sáva*, Panicum miliare; 4360 under *harika*, Paspalum scrobiculatum; 1972 under maize, Zea mays; 57 under barley, Hordeum hexastychon; and 4901 under other grains of which details are not given. Pulses occupied 92,767 acres or 9·80 per cent. Of these 29,757 were under cajan pea, Cajanus indicus; 25,534 under gram, Cicer arietinum; 23,975 under *kulthi*, Dolichos biflorus; 3379 under peas, *vatána*, Pisum sativum; 2381 under *mug*, Phaseolus radiatus; 1337 under *masur*, Ervum lens; 564 under *udid*, Phaseolus mungo; and 5840 under other pulses. Oilseeds occupied 36,578 acres or 3·86 per cent, of which 4668 were under gingelly seed, Sesamum indicum; 1507 under linseed, Linum usitatissimum; 1082 under rape, *sarau*, Brassica napus; 108 under mustard, Sinapis racemosa; and 29,213 under other oilseeds. Fibres occupied 92,988 acres or 9·83 per cent, of which 91,407 were under cotton, Gossypium herbaceum; 982 under Bombay hemp, Crotalaria juncea; and 599 under brown hemp, Hibiscus cannabinus. Miscellaneous crops occupied 25,256 acres or 2·67 per cent, of which 4176 were under sugarcane, *us* (M.) or *kabbu* (K.), Saccharum officinarum; 9314 under tobacco, Nicotiana tabacum; 7967 under chillies, Capsicum frutescens; 84 under coffee; and the remaining 3715 under various vegetables and fruits.

The chief details of some of the most important crops are: Indian

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CROPS.

Indian Millet.

millet, *jvári* (M.) or *jvála* (K.), Sorghum vulgare, in 1881-82 covered 422,945 acres or 44·71 per cent of the whole tilled area. It is grown all over the district, especially in Athni, Parasgad, Chikodi, Sampgaon, and Gokák. It is the chief main-rain or *mungári* crop and is grown in all red soils, except in the lighter and more sandy lands where spiked millet is often mixed with it. Sometimes it is mixed with one or several pulses together with a few seeds of Bombay hemp. The reason why pulses are sown with Indian millet is that in case the rains fail and the corn crop is scanty, the pulses, which can bear up against drought and ripen with the help of dew alone, may yield some return. Where the millet does well, it smothers the pulse without taking any harm. In growing millet after the first heavy fall of rain generally early in June, the field is three times ploughed under ordinary circumstances with the light plough or *ranti*. The seed is sown by the seed-drill or *kurgi* (K.), one row out of every two or three being sown with pulse. The sowing season is the second half of June and the first half of July when the first heavy fall of rain has softened the soil. Indian millet as a rule is ready for reaping about the middle of November, nearly a fortnight after the end of the south-west rains. Several weeks before the crop ripens, as soon as the corn heads begin to form, guards, some on foot others on stages or in trees, are set to keep off birds and pilferers.[1] When the reaping is over the grain is trodden out by the feet of cattle and winnowed. It is then ready for use. Indian millet is the common food of the people and the straw is used as fodder for horses and cattle. After years of scarcity millet straw becomes so valuable near Belgaum that much of the cotton land is given to millet. One advantage of millet is that it takes very little out of the soil. Where land is scarce, farmers often raise Indian millet on the same red fields year after year. The pulses which are grown with Indian millet take longer to ripen, and remain in the fields till after the beginning of January nearly two months after the millet has been reaped.

Spiked Millet.

Spiked Millet, *bájri* (M.) or *saji* (K.), Penicillaria spicata, in 1881-82 covered 58,381 acres or 6·17 per cent of the tillage area. It is grown chiefly in Athni, Gokák, and Chikodi. The time and the way of growing spiked millet are almost the same as the time and way of growing Indian millet. In sandy plains they are often sown together. The chief difference is that spiked millet ripens about the end of October, that is a fortnight before Indian millet. Spiked millet is eaten chiefly by the labouring classes. The straw makes excellent thatch. It is also eaten by cattle but is not esteemed as fodder.

Rice.

Rice, *bhát* (M.) *bhatta* (K.), Oryza sativa, in 1881-82 covered 64,774 acres or 6·84 per cent of the tillage area. It is chiefly grown in Khánápur, Belgaum, and Sampgaon. There are five modes of rice tillage, three regular modes, and two extra modes which are used only when the regular-modes fail. The first and best form of rice tillage is called *rop* (M.) *natihackhona* (K.), or planting, but many

[1] A head of Indian millet commonly contains 400 to 500 grains; in a remarkably fine head 2000 grains have been counted. Marshall's Belgaum, 10.

husbandmen shrink from it because of the cost and the heaviness of the labour. In Khánápur and Belgaum during April or early May a small nursery or seed-bed, a plot to which water has easy access, is covered with leaves, wood, straw, and rubbish, and this covering is burnt in late May before the first rainfall. At the same time the fields into which the seedlings are to be planted are being got ready. The field-banks are mended, the water-ways cleared, stiff plants and stalks are cut out, and as much of the ground as possible is covered with grass, weeds, and rubbish, and burnt. When the first rain falls the seed-bed is thrice ploughed and harrowed. When well soaked it is covered with a thick broadcast sowing of rice in husk. The ploughing of the fields into which the seedlings are to be planted is not begun until the bullocks sink in the mud to the knees, a dreadful toil both to man and bullocks. Every field is thrice ploughed, and after the third ploughing, to clear it of roots, is harrowed with a long-toothed harrow. In a good season, that is heavy rain with gleams of sun, after five weeks or early in June the seedlings are fifteen to eighteen inches high and fit for planting. When the seedlings are ready, if possible in a break of bright weather, cowdung-ashes, litter, and leaves decayed to dust in the manure-pit are brought from the village, spread equally over the field, and trodden deep into the mud. When the field is manured the surface is levelled by dragging over it a loaded board called *hendor* (M.) or *karadu hodiyona* (K.). A day or two later, still if possible in fine weather when the field is not deep in water, the seedlings are rooted by the hand out of the seed-bed and brought to the fields in baskets. A rake with short teeth, ten to twelve inches apart, is drawn over the smooth ground to mark the lines in which the seedlings are to be set. The workers, who are generally women, follow with baskets from which they take small handfuls of eight to ten plants, and, at ten to twelve inches apart and as far as possible opposite the middle of the interval of the next row, thrust them about a foot deep. Except so much as is wanted to flood the lower fields the water is kept in the field and when each field has had its share the channel to it is blocked. Two weedings are given, but, as the field has been so carefully cleaned, the weeds are seldom strong. In ordinary years planted rice is ready for cutting in November or December. The second mode of growing rice is the *kivri* or *kurgi*, that is the seed-drill plan. This system is adopted in the hope that enough rain will fall within a week after the seed has been sown to make the soil muddy. It saves much labour, but should the rain hold off for about a fortnight the ground becomes heated and the seed suffers from the dryness and is eaten by birds and lizards. At best the outturn is small. The third method is adopted when the early rain is so heavy that the seed-drill cannot be worked. Furrows are made by the light plough and the seed is sown in the furrow. This furrow-sowing system never yields a good crop. When one of the three regular modes fails, in the hope that the harvest may not be entirely lost, sprouted seed or *málaki* (K.) is sown. A sackcloth or matting bag is filled with grain, dipped in water, and laid in a warm close place. In three or four days the seeds sprout and are thrown

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thick and broadcast on the field. The fifth mode of growing rice is to root out the sprouted rice seedlings where they have come too thickly and plant them into the bare fields. This is the rice-grower's forlorn hope. It is called *surdi* (K.) or the cold crop, perhaps because it does not ripen till the close of the cold weather.

Ripe rice is reaped and thrashed either by striking the ears against a board, or by beating them with a stick. After winnowing the grain is carried home and dried in the sun. The husks of as much as is wanted for immediate use are beaten off in a stone mortar, *ukhal* (M.) or *varalu* (K.), by a wooden pestle, *musal* (M.) or *vanaki* (K.), and the rest is stored in high cylindrical baskets called *kungi*, the openings in which within and without are closed by a coating of cowdung.

In parts of Khánápur near the Sahyádris two crops of rice are grown every year. The first crop is sown with a seed-drill about the end of June, or is sown sprouted in August. It ripens towards the end of October and is called the *Kártik* or October-November crop. The second crop is sown sprouted in November and December, and ripens towards the end of April. It is called the *Vaishákh* that is the March-April or the *sugi* crop. The April crop is reckoned better than the October crop because it is not exposed to the cold weather winds.

Wheat.

Wheat, *gahu* (M.) *godi* (K.), Triticum æstivum, in 1881-82 covered 63,499 acres or 6·71 per cent of the tillage area. It is grown in Belgaum, Sampgaon, Parasgad, Athni, Gokák, and Chikodi. Three varieties of wheat are grown in Belgaum, *támbda* or red, *khapli*, and *holi*. The *támbda* or red is the best variety and is like English wheat. The *khapli* is a bearded wheat like English barley except that the grain is oblong. It is grown as a watered crop in garden lands. The *holi* is an inferior wheat grown in rice lands after the rice has been carried. Wheat is a cold-weather or *rabi* crop. It prospers only in good black soil. In October, soon after the first heavy burst of the north-east or Madras monsoon, the wheat is sown like *jvári* in carefully prepared and manured land and is reaped in January and February. The quantity of seed varies from twelve to thirty-two pounds the acre. In wheat-growing lands the best succession of crops is said to be Indian millet the first year, cotton the second year, wheat the third year, Indian millet the fourth, cotton the fifth, and wheat the sixth, and so on in the same rotation. In some places wheat alternates with sugarcane and gram; occasionally *kusbi* or safflower is raised two to six feet apart between the rows of wheat. The safflower does not ripen till one month after the wheat, that is about the end of March, and in no way interferes with its growth. Instead of safflower, linseed or gram is often grown. Wheat takes three to three and a half months to ripen and grows eighteen inches to two feet high in good soils and one foot high in poor soils. Towards the end of December one good shower is wanted to make the wheat crop safe. Southerly winds are said to be bad for wheat, northerly or easterly winds are preferred. An excessively cold wind causes a blight called *ittangi* (K.), also called *kunkam rog*, which turns the wheat red and reduces the outturn. The average wholesale rupee price of wheat is about 2*s.* the

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quarter (28 pounds the rupee). Wheat is not the staple food of the people. Only the rich and well-to-do can afford it for everyday use. The poorer classes eat it only on holidays. Wheat is brought from Dhárwár and Bijápur, and is sent to Goa, Vengurla, and other Konkan ports, and thence to Bombay. A small quantity goes to Kolhápur. Wheat from Athni finds its way to Belgaum, Kolhápur, Vengurla, Chiplun, and Rájápur. No wheat is carried to any railway station from any part of the district. The nearest stations are Poona 210 and Bársi 140 miles from Belgaum. The cart-hire to these stations varies from £1 to £2 (Rs.10-20). The hire of a cart which carries 1000 pounds from Belgaum to Vengurla, a distance of about sixty miles is 16*s.* to £1 (Rs.8-10). Belgaum traders buy wheat from the Bijápur growers and send it to Vengurla and to Bombay on their own account.

Sugarcane.

Sugarcane, *us* (M.) *kabbu* (K.), Saccharum officinarum, in 1881-82 covered 4176 acres or 0·44 per cent of the tillage area. It is grown chiefly in Chikodi, Belgaum, Sampgaon, and Khánápur. It is raised in the same lands as rice, and it is usual to have one crop of cane followed by two crops of rice. The first step in growing sugarcane is taken in the first half of January when the land receives three ploughings with the light plough, one lengthwise, one across, and one cornerwise. As much manure as the landholder is able to gather is harrowed into it; about three tons an acre is a fair quantity. All roots bushes and rubbish are harrowed out. In the beginning of February furrows are drawn all over the field by the light plough nine or ten inches deep and nine or ten inches apart. Water is let into the furrows till the bottom is deep in mud. Into the mud sugarcane cuttings, fifteen to eighteen inches long and with three to five joints, are laid flat and firmly pressed into the bottom of the furrow by the foot. The plough is driven between the furrows to cover the cane-cuttings. If the cane is the common white kind no more watering is required, and the field is levelled by drawing over it a cross beam of wood. It is covered with straw to keep the surface from parching in the sun and is enclosed with a hedge. Except two hand weedings, no further expense is incurred. If they are of the black cane, after the cuttings are covered with earth, the furrows are not entirely filled with earth, as, from February until the rains in June, water must be let into the field at least once every fourteen days. The cane ripens at the end of a year. To plant an acre of sugarcane 20,000 cuttings are required. They cost about 1*s.* (8 *as.*) the thousand for the white kind and 2*s.* (Re.1) for the black. In the raw state as the black is sweeter it fetches a higher price than the white, the black cane selling for ¾*d.* (½ *anna*) and the white for ⅜*d.* (¼ *anna*) a piece. Both varieties are used for making molasses or *gur*.—Molasses is made in a press of two upright solid wooden cylinders on one of which is cut an endless male screw and on the other an endless female screw. These are set in pivots cut in a strong plank which is fixed at one edge of the bottom of a pit two or three feet deep. The pit is large enough to hold, besides the press, the boiling apparatus and the workmen. The male screw cylinder is about a foot higher than the female and into its head a horizontal bar is let to

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which a bullock is yoked and keeps the machine constantly revolving. The bullock's path is on the level ground outside the mouth of the pit, and the bar as it circles passes clear of the top of the female cylinder. The canes are broken off close to the ground and cut into pieces about a foot long. A man sits above and keeps feeding the cylinders with pieces of cane. The juice is thoroughly squeezed out, and runs into a large earthen vessel at the base of the press. A bamboo spout leads it into a flat copper pan under which a hole is dug for the fire, and the juice is kept gently and constantly boiling. When it has gained a proper consistency it is baled into a cloth which lies loosely over a hole in the earth about a foot across and four or five inches deep. The molasses is thus formed into a flattish cake called *dhep*.

Ragi.

Rági or *náchni*, Eleusine corocana, in 1881-82 covered 30,015 acres or 3·17 per cent of the tillage area. It is grown chiefly in Khánápur, Belgaum, Chikodi, and Sampgaon. *Rági* is one of the early monsoon crops, being sown in April or May and reaped in September. It is grown on all red soils in West Belgaum and Khánápur. *Rági* is sometimes raised on fallow ground to make it fit to yield a crop of *sávi* Panicum miliare in the next year. In some places it is grown on plots that have yielded a *til* crop in the previous year and in the year after will yield *sávi*. The ground is prepared by burning on it wood, leaves, and rubbish. Commonly some pulses and not unfrequently a few seeds of mustard and Indian maize are sown with the *rági* for home use. In parts of the country *rági* seed is mixed with cowdung and a small quantity is dropped with the hand at intervals of about nine inches apart into furrows drawn by the small plough about seven inches apart. After this the seeds are covered and the field smoothed either by the levelling block or *karadu* or by a smaller scalping knife called *balsál*. In every seventh furrow some pulse or other bush grain as *mung*, *tur*, *pávta* and *udid* are sown. *Rági* is sown with the first shower of the south-west monsoon, that is immediately after the thunderstorms in April and May. It ripens and is ready for gathering in September before the end of the rains. It is cut by the sickle, tied in small sheaves, and stacked on the spot until the October rains are over, when it is thrashed. *Rági* is a very productive crop and can be raised in places too steep for the plough or harrow. The grain is generally eaten by the poorer classes. It is ground into flour and dressed in various ways. *Rági* straw is reckoned better than rice straw for all kinds of cattle.

Tobacco.

Tobacco, *tambáku* (M.) *hágesoppu* (K.), Nicotiana tabacum, in 1881-82 covered 9314 acres or 0·98 per cent of the tillage area. It is grown chiefly in Athni and Chikodi in gardens or on favourable plots near villages or along rivers and streams. The best tobacco is raised on the deep alluvial lands near the Krishna. The seed is sown in nursery beds, usually in gardens, about the beginning of July. For the first month, if there is no rain, the beds must be watered every other day, and, after the first month, every fifth day. The seedlings are fit for planting towards the end of August. Before this the field, which is generally of the best soil, is manured